

(12) UK Patent Application (19) GB (11) 2 347 336 (13) A

(43) Date of A Publication 06.09.2000

(21) Application No 0002709.4

(22) Date of Filing 08.02.2000

(60) Parent of Application No(s) 0009410.2 under Section 15(4) of the Patents Act 1977

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(51) INT CL⁷
A01M 1/22

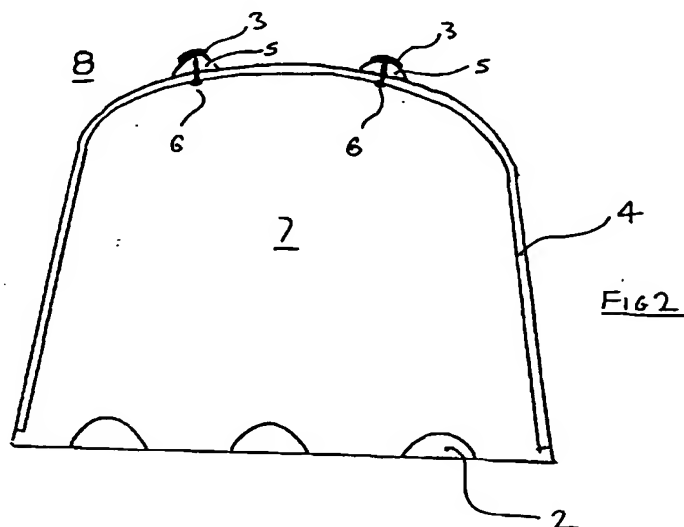
(52) UK CL (Edition R)
A1M MDB

(56) Documents Cited
GB 2334193 A WO 87/04901 A1 US 4914854 A
US 4907365 A US 4223468 A

(58) Field of Search
UK CL (Edition R) A1M MDB
INT CL⁷ A01G 13/10 , A01M 1/22
Online: WPI, EPODOC, JAPIO

(54) Abstract Title
Pest electrocution device

(57) A pest electrocution device comprises a pest shelter 1 having an inner area 7 and an outer area 8, the inner area having electrical conductors in the form of a grid 4 adapted for contact with pests and the outer area having two electrical terminals 3 in electrical communication with the conductors and being adapted for electrically conductive contact by complementary second terminals 13 of a wand (12 figure 5). The wand is adapted for supplying electricity to the pest electrocution device by means of contact between the first and second terminals. The device may also be in the form of a mat (Figs 3 and 4) having terminals on an outer face and conductors on an inner face adjacent the ground.



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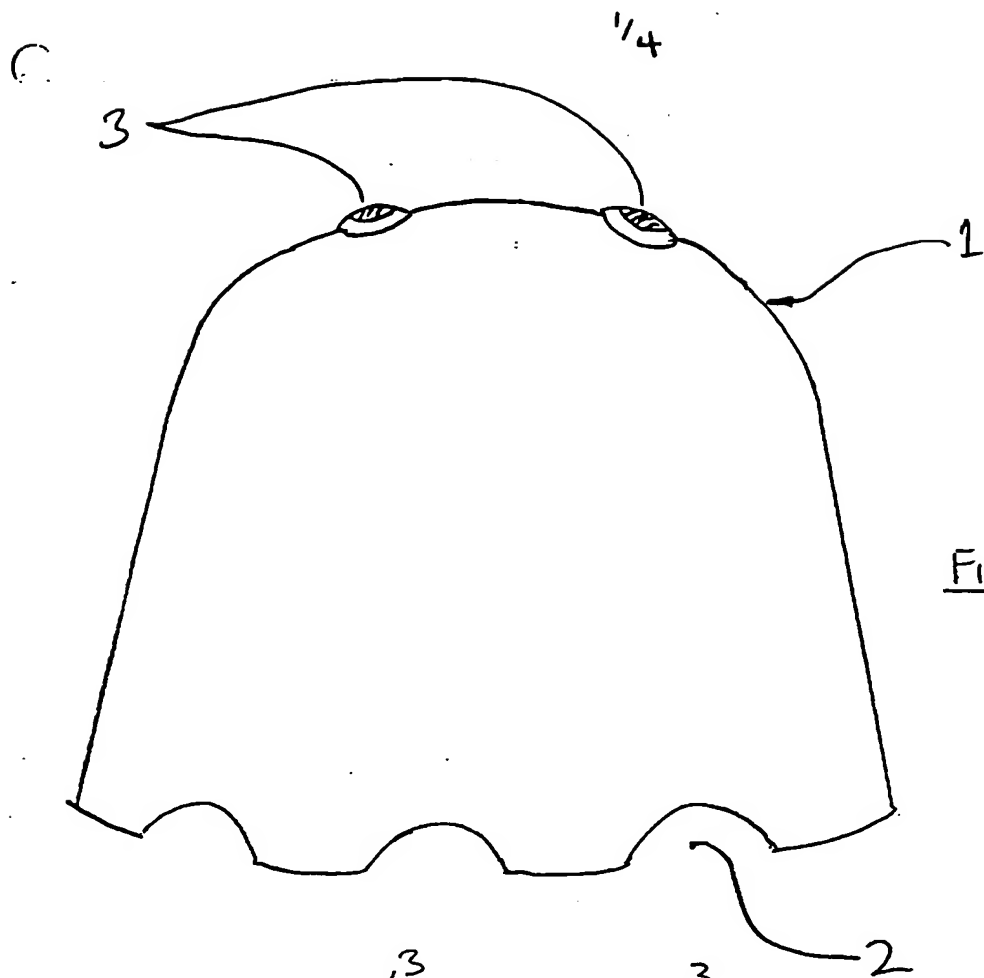


FIG 1

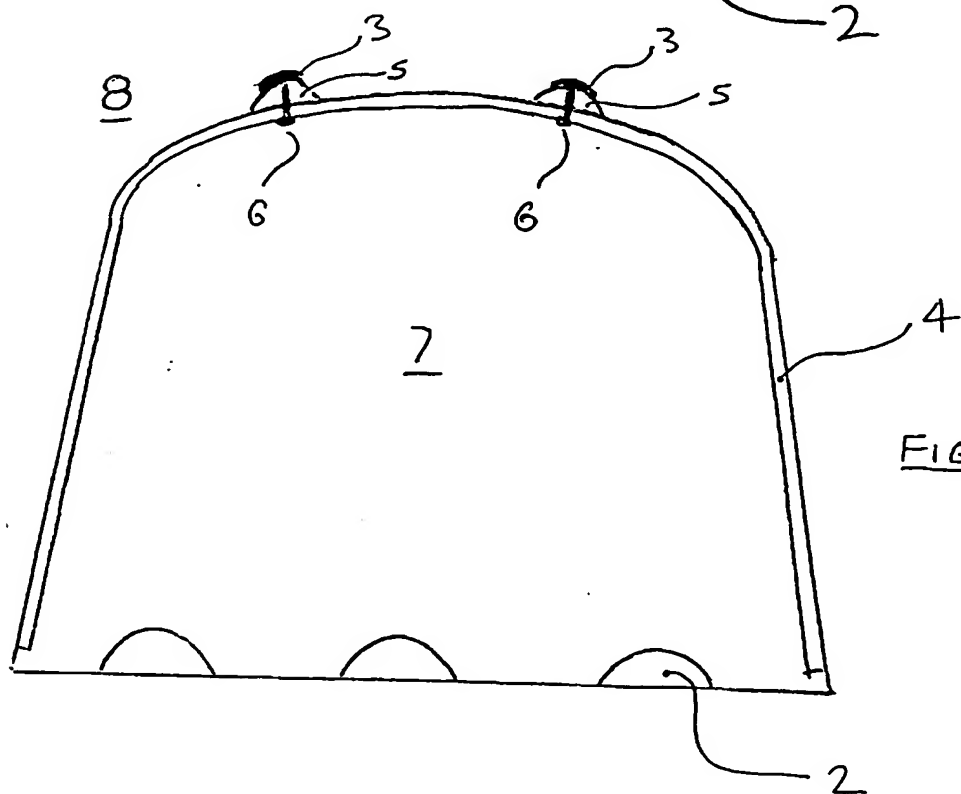


FIG 2

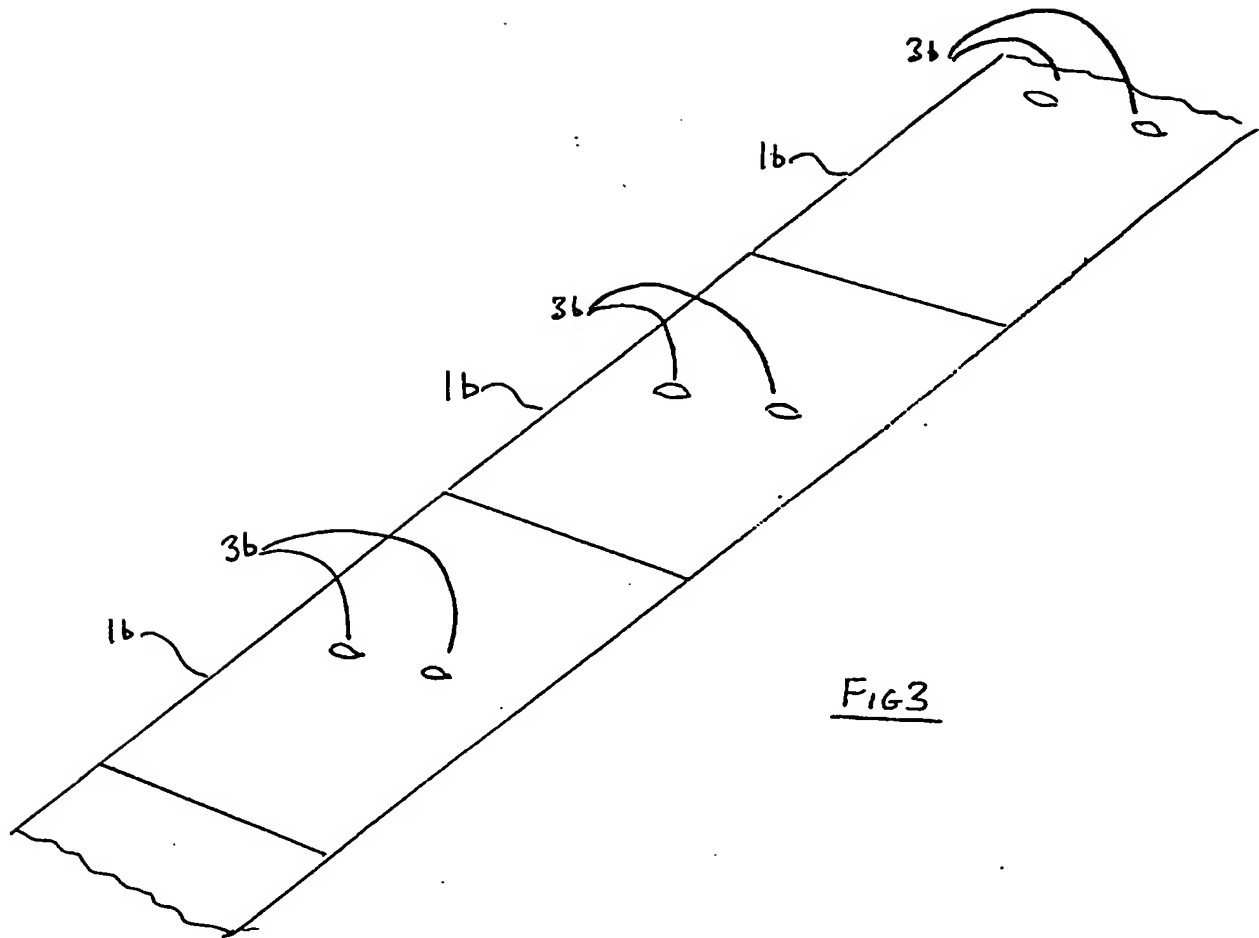


FIG 3

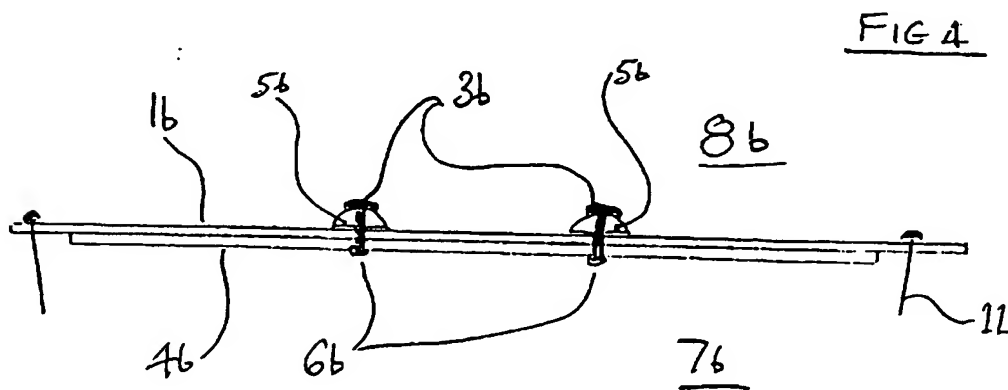


FIG 4

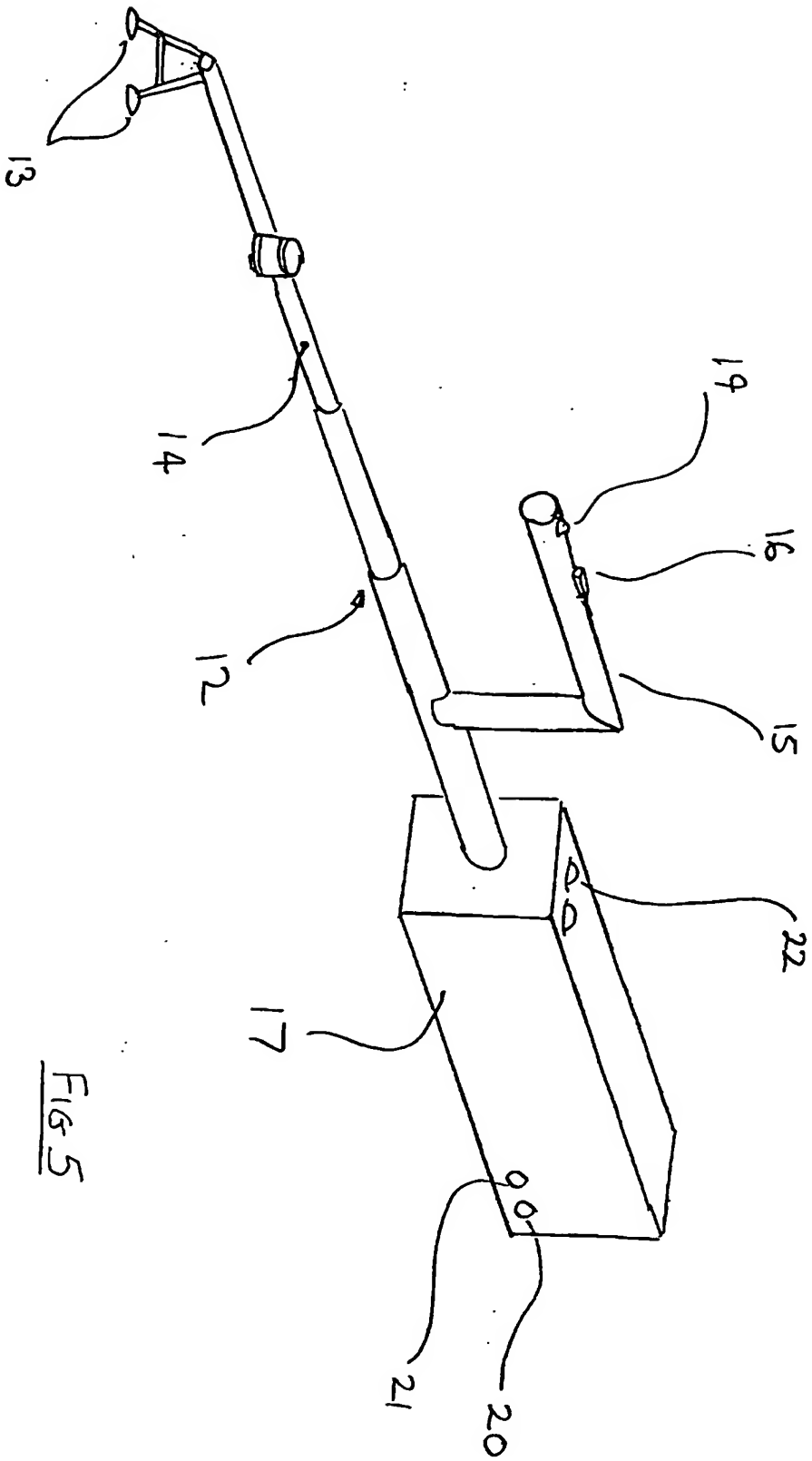


Fig 5

4/4

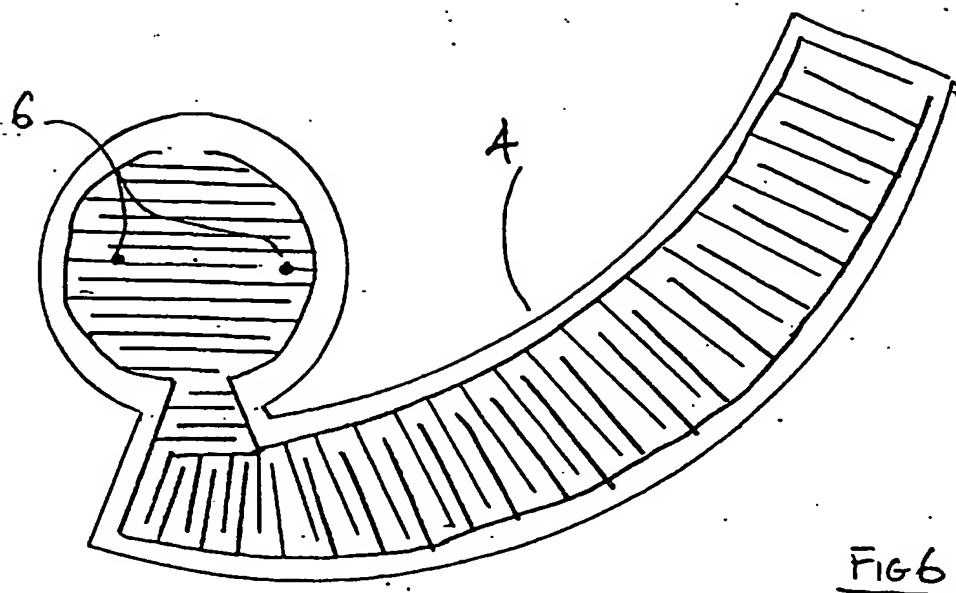


FIG 6

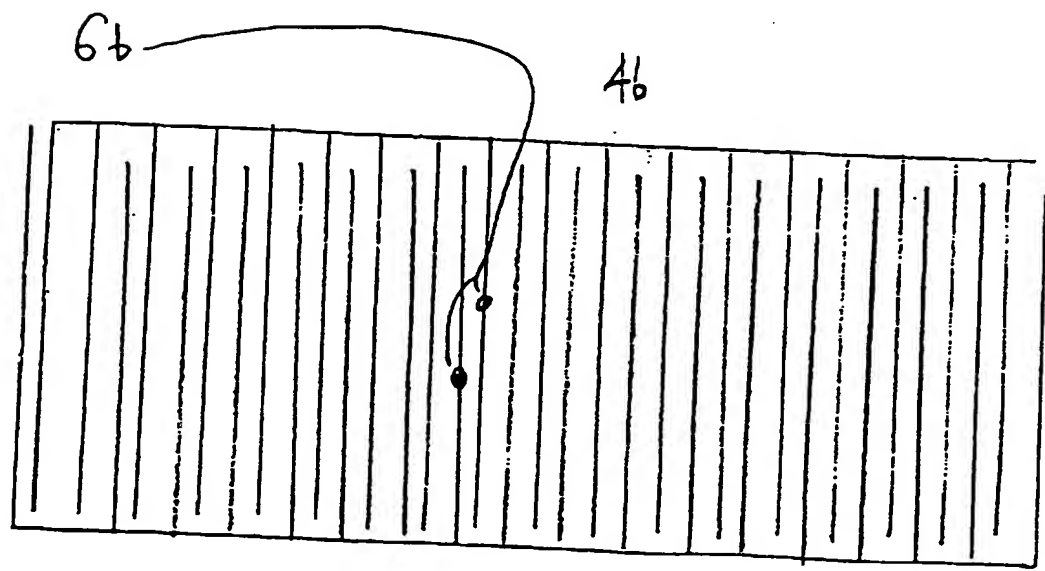


FIG 7

Pest Electrocutation Device

The present invention relates to a pest electrocution device and in particular but not exclusively to a device for the electrical stunning or destruction of slugs, snails and like gastropods. Although the description uses the word slug etc this should not be construed in any limiting way. The word "electrocution" is used to embrace all forms of electrical input to a slug eg mild stunning to complete killing.

In the past there has been a tremendous amount of research directed at combatting gastropods and other pests. Many insecticides and other chemicals have been used, for example metaldehyde in slug bait. As with all chemicals, its use has inherent problems for example, it can be eaten by birds and other animals inadvertently. Furthermore slugs that have ingested the slug bait may be eaten by birds and hedgehogs, these animals then suffering the consequential affects.

Safer and more environmentally friendly options are electric deterrents. For example those which have two or more closely spaced conductors. The conductors have a constant potential

across them so that when a creature bridges the space it is electrocuted. These electric deterrent devices have drawbacks. High voltages are used which makes them dangerous to children if used outdoors in a garden say. If a slug is stuck between the conductors then the current drain across the conductors will be high if a constant high voltage is used. High voltages are prone to leaks in damp conditions so reducing their effectiveness. It is well known that soft bodied ~~pests~~ like slugs etc conduct electricity reasonably well so a low voltage can be used to kill them. This means that batteries can be used to power such devices.

Thus in my previous patent GB 2316288 I disclosed an invention whereby pests were electrocuted using a battery powered device by means of only intermittent bursts of electricity during the night to reduce the electrical power consumption. Devices that are supplied with electricity need cumbersome and breakable wires, whereas batteries are expensive and need recharging. Solar power may be used but for the power required this is an expensive option.

It has been found that slugs etc tend to hide during daylight hours, ideally in a humid warm place. They can be electrocuted

in that place at any time during the day.

According to one aspect of the invention there is provided a pest electrocution device comprising a pest shelter having an inner area and an outer area, the inner area having electrical conductors adapted for contact with pests and the outer area having at least one first electrical terminal in electrical communication with the conductors and being adapted for electrically conductive contact by at least one complementary second terminal.

According to a second aspect of the invention there is provided also a supply device adapted for supplying electricity to the pest electrocution device according to the first aspect comprising at least one manually manipulatable second terminal adapted for complementary contact with, and supplying electricity to, the at least one first terminal according to the first aspect.

Preferably the manipulatable complementary terminals(s) may be electrically connectable to a power supply via a hand operated switch and may be formed on the end of a hand held wand so that electrically conductive contact can be made with the terminal(s) of the device in a plurality of orientations. Thus the invention realises the need for an electrical slug exterminator which can be momentarily powered by the touch of a wand, whilst providing

a “green” and environmentally friendly device suitable for organic growers etc.

A number of embodiments will now be described in detail in order to illustrate the invention without limitation other than that claimed.

Figure 1 shows a perspective view of a first embodiment of the invention.

Figure 2 shows a sectional view through the device shown in figure 1.

Figure 3 shows a perspective view of a second embodiment of the invention.

Figure 4 shows a sectional view through the device shown in figure 3.

Figure 5 shows a wand for powering the devices shown in figures 1 to 4.

Figure 6 shows an electrocution grid for use with the embodiment illustrated in figures 1&2.

Figure 7 shows an electrocution grid for use with the embodiment illustrated in figures 3&4.

Figure 1 shows a pest shelter in a domed form 1 having slug access holes 2 and two terminals 3 for the supply of electricity to an electrocution grid within the shelter. The shelter may be placed on the ground and left generally unattended.

Figure 2 is a section through the shelter shown in figure 1. The electrocution grid 4 is secured to the inside of the shelter and has pins 6 for connecting the grid to the terminals 3. The pins 6 can be integrally formed with the terminals 3 and flattened over on the inner side to secure the grid 4 to the shelter and provide electrical connection. Insulating posts 5 are provided in order to raise the terminals 3 above any water that has settled on the outer

surface of the shelter. The grid 4 may be an insert as shown or may be formed integrally with the shelter 1. An inner area 7 and an outer area 8 say are detailed.

Figure 3 shows a further embodiment of the invention. A number of shelters 1b are shown each in the form of an elongate strip of flexible material joined at each end. Each strip may be 2m long or longer and will have its own grid 4b. The strips may be joined permanently or may be releasably fixed at there ends. The strip 1b is shown flat but may take the shape of the ground on which it is laid or may have a slight upward curvature to allow space underneath. Terminals 3b are situated in the middle of each strip. Of course a single long length may be used having a plurality of grids or one long grid.

Figure 4 shows a section through a strip 1b shown in figure 3. An electrocution grid 4b is secured to the inner side of the strip and

the terminals may be fixed to the strip in a manner similar to that described above. Ground spikes 11 are shown for holding down the strip. No access holes are shown in this figure because the strip will not touch the ground fully. An inner area 7b and an outer area 8b are formed by this shelter. Insulating posts 5b are shown, again to raise the height of the terminals 3b.

Figure 5 shows a wand 12. A pair of complementary terminals 13 are adapted for touching to the terminals 3 or 3b. The wand has a telescopic shaft 14, a handle 15, a terminal powering switch 16 and a battery power supply 17. The terminals 13 may be resiliently mounted to the shaft in order to make contact with the terminals 3 or 3b more positive and at any orientation. Additional features of this embodiment include: a flexible elbow 18 for offsetting the wand to the terminals 3/3b; an indicator light 19 to show the user when contact has been made; a recharge socket 20; a fuse holder 21; and a battery state indicator 22. The

battery 17 may be in the form of a back-pack. A very high voltage may be used. The wand may be connected via a cable to a mains supply, either with or without a stepping up/down of the voltage

Figure 6 shows the grid 4 in a flat blank form. This grid is formed from flexible plastics material having an electrical conductor formed thereon eg copper or carbon tracks .

Folding the blank produces the domed shape required for fitting into the shelter 1. The grid 4b shown in figure 7 may be manufactured in the same manner but would be an elongate rectangular blank. A series of grids 4b may be attached to the shelter 1b along its length.

In use the any number of shelters 1 or 1b are deployed in areas where slugs etc are present. During the day when the slugs are sheltering they are likely to "sleep" under the shelter. The shelter

1b may be provided flat or in a rolled form for unrolling by hand or from a tractor say. It may be rolled up again after use for re-use.

The wand is used to power the grid by touching terminals 13 with terminals 3 or 3b and thereby electrocute the slugs in the shelter on the grid. The wand may have a voltage of 9v or higher (conveniently 12 to 24v) and need only be placed on the each set of terminals 3 or 3b in turn momentarily and in this case switch 16 is pressed to electrocute any slugs that bridge conductors on the grid 4/4b.

Whilst two terminals are shown in each embodiment (to produce a circuit), one only could be used. In such an instance a high voltage would be used to supply one side of the grid and a ground spike or the like would earth the other side of the grid, allowing earthing of the current supplied to the single terminal.

The grid illustrated is a discrete item, however it is possible that it may be a coating on the shelter eg sprayed on through a stencil. Alternatively it could be a self-adhesive blank or a thread of conductive material eg a mixture of twine and metallic threads twisted together to form a conductive track. The shelter shown could of course take any shape provided it forms a shelter for slugs.

Various other modifications will be apparent. The description and drawings are not intended to limit the invention, the scope of which is defined in the claims appended hereto.

Claims

1. A pest electrocution device comprising a pest shelter having an inner area and an outer area, the inner area having electrical conductors adapted for contact with pests and the outer area having at least one first electrical terminal in electrical communication with the conductors and being adapted for electrically conductive contact by at least one complementary second terminal.
2. A supply device adapted for supplying electricity to the pest electrocution device of claim 1 comprising at least one manually manipulatable second terminal adapted for complementary contact with, and supplying electricity to, the at least one first terminal.
3. A supply device according to claim 2 wherein the second terminal(s) is/are electrically connectable to a power supply via

a hand operated switch.

4. A supply device according to claim 2 or 3 wherein the second terminal(s) is/are formed on the end of a hand held wand and are adapted such that electrically conductive contact can be made with the first terminal(s) of the pest electrocution device of claim 1 in a plurality of orientations.

5. A pest electrocution device according to claim 1 wherein the shelter is formed in a domed shape having pest access to the inner area and the first terminal(s) is/are disposed on an upper part of the dome.

6. A pest electrocution device according to claim 1 wherein the shelter is formed as a elongate strip.

7. A pest electrocution device according to any one of claims 1,

- 5 or 7 wherein the first terminal(s) has/have a raised insulator and has/have a connector extending from the outer area to the inner area through a wall of the shelter for providing electrical communication between the conductors and the first terminal(s)
8. A pest electrocution device according to any one of claims 1 or 5-7 wherein the conductors are formed on a flexible blank insertable into the inner area.
9. A pest electrocution device according to any one of claims 1 or 5-7 wherein the shelter is moulded and the conductors are formed integrally within the shelter during a moulding process.
10. A pest electrocution device according to any one of claims 1 or 5-7 wherein the conductors are formed by a coating at the inner area.

11. A method of electrocuting pests comprising the steps of providing a pest electrocution device comprising a pest shelter having inner and outer areas, the inner area having electrical conductors adapted for contact with pests and the outer area having at least one electrical first terminal in electrical communication with the conductors the at least one terminal being adapted for electrically conductive contact by at least one manually manipulatable complementary second terminal and momentarily supplying electricity to the device by means of at least touching the terminal(s) with the second terminal(s).

11. A method of electrocuting pests substantially as described herein with reference to the drawings.

12. A pest electrocution device substantially as described or illustrated herein.

13. A supply device substantially as described or illustrated herein.

Amendments to the claims have been filed as follows

1. A pest electrocution device comprising a pest shelter having an inner area and an outer surface, the inner area having electrical conductors adapted for contact with pests and the outer surface having at least one exposed first electrical terminal in electrical communication with the conductors and being adapted for electrically conductive contact by at least one complementary second terminal.



2. A pest electrocution device according to claim 1 in combination with a supply device, the supply device comprising at least one manually manipulatable second terminal adapted for complementary contact with, and supplying electricity to, the at least one first terminal.

3. A supply device according to claim 2 wherein the second terminal(s) is/are electrically connectable to a power supply via a hand operated switch.

4. A supply device according to claim 2 or 3 wherein the second terminal(s) is/are formed on the end of a hand held wand and are adapted

such that electrically conductive contact can be made with the first terminal(s) of the pest electrocution device of claim 1 in a plurality of orientations.

5. A pest electrocution device according to claim 1 wherein the shelter is formed in a domed shape having pest access to the inner area and the first terminal(s) is/are disposed on an upper part of the dome.



6. A pest electrocution device according to claim 1 wherein the shelter is formed as a elongate strip.



7. A pest electrocution device according to any one of claims 1, 5 or 6 wherein the first terminals(s) has/have a raised insulator and has/have a connector extending from the outer surface to the inner area through a wall of the shelter for providing electrical communication between the conductors and the first terminal(s)

8. A pest electrocution device according to any one of claims 1 or 5-7 wherein the conductors are formed on a flexible blank insertable into the

inner area.

9. A pest electrocution device according to any one of claims 1,5,7 or 8 wherein the shelter is moulded and the conductors are formed integrally within the shelter during a moulding process.

10. A pest electrocution device according to any one of claims 1 or 5-9 wherein the conductors are formed by a coating at the inner area.

11. A method of electrocuting pests comprising the steps of providing a pest electrocution device comprising a pest shelter having an inner area and an outer surface, the inner area having electrical conductors adapted for contact with pests and the outer surface having at least one exposed electrical first terminal in electrical communication with the conductors, the at least one terminal being adapted for electrically conductive contact by at least one manually manipulatable complementary second terminal and momentarily supplying electricity to the device by means of touching the first terminal(s) with the second terminal(s).

12. A method of electrocuting pests substantially as described herein with reference to the drawings.

13. A pest electrocution device substantially as described or illustrated herein.

14. A pest electrocution device according to claim 13 in combination with a supply device substantially as described or illustrated herein.





Application No: GB 0002709.4
Claims searched: 1-12

Examiner: Paul Jenkins
Date of search: 10 March 2000

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.R): A1M (MDB)

Int CI (Ed.7): A01G 13/10; A01M 1/22

Other: Online: WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X,Y	GB 2334193 A (CHANG) Whole document relevant see especially figures 1 and 2	X: 1-2, 5, 8 & 11 Y: 3-4
X,Y	WO 87/04901 A1 (STONE) See especially Page 8 line 18 - page 9 line 7	X: 1-2, 5, 7 & 11 Y: 3-4
X,Y	US 4914854 (ZHOU) Whole document relevant	X: 1-2, 5, 7 & 11 Y: 3-4
A	US 4907365 (CONGLIARO) Whole document relevant	—
Y	US 4223468 (LAWRENCE) Figures 1 and 3 and column 3 lines 49 - 68	3-4

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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